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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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ERICSSON INC. 6300 LEGACY DRIVE M/S EVR 1-C-11 PLANO, TX 75024			EXAMINER KAO, JUTAI	
			ART UNIT 2616	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/507,249

Applicant(s)

MALOMSOKY ET AL.

Examiner

JUTAI KAO

Art Unit

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20, 21, 41 and 42 is/are allowed.
- 6) ☒ Claim(s) 1-4, 10, 19, 22-25, 31 and 40 is/are rejected.
- 7) ☒ Claim(s) 5-9, 11-18, 26-30 and 32-39 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/10/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 09/10/2004, 12/14/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Objections

1. Claims 1 and 22 are objected to because of the following informalities: spelling error. Claims 1 and 22 both include the word "fulfil", which is supposed to be spelled as "fulfill", in line 6 and 11. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 2 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 2 and 23 recites the approximating of a linear region by modeling the traffic mix as a superposition of periodic on-off connections. It is unclear what is meant by the "superposition" of connections and how this superposition provides an approximation of a linear region. The only reference of this limitation found in the specification is the passage describing Fig. 6 where two on-off connections are shown. However, the passage merely mentions the word "superposition" without explaining the specific effect of such superposition, nor does the figure provide any indication of the superposition of the connections.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1, 19, 22 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sabry (US 6,628,612) in view of Andrews (US 6,771,598) and Racz (US 2002/0176360).

Sabry discloses a derivation of equivalent bandwidth of an information flow including the following features.

Regarding claim 1, a method for controlling admission of a new connection onto a transport link in a communication network (see "connection admission controller" recited in the abstract), said method comprising the steps of: checking whether a multi-

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service class traffic mix (see "several different traffic classes" recited in column 2, lines 50-51) defined by previous admitted connections present on said link together with said new connection (see "equivalent bandwidth be determined both for the new connection and for the existing connections" recited in column 1, lines 19-22) is contained within an overload-limited admissible region (see "whether admission would cause a bandwidth used to exceed a maximum bandwidth allowed" recited in the abstract; exceeding the bandwidth is the overload condition) defined as a non-linear (see "having a non-linear relationship to the number of connections" recited in the abstract) that contains a set of traffic mixes that fulfill a given overload requirement, where the dimensions of said non-linear admissible region are the number of connections in the respective service classes (see Fig. 5, which shows a figure relating equivalent bandwidth and number of connections; and see Fig. 2, which shows the comparison between the equivalent bandwidth and maximum allowed bandwidth).

Regarding claim 22, an admission controller for controlling admission of a new connection onto a transport link in a communication network (see "connection admission controller" recited in the abstract), said admission controller comprising: means for checking whether a multi-service class traffic mix (see "several different traffic classes" recited in column 2, lines 50-51) defined by previous admitted connections present on said link together with said new connection (see "equivalent bandwidth be determined both for the new connection and for the existing connections" recited in column 1, lines 19-22) is contained within an overload-limited admissible region (see "whether admission would cause a bandwidth used to exceed a maximum

bandwidth allowed” recited in the abstract; exceeding the bandwidth is the overload condition) defined as a non-linear (see “having a non-linear relationship to the number of connections” recited in the abstract) that contains a set of traffic mixes that fulfill a given overload requirement, where the dimensions of said non-linear admissible region are the number of connections in the respective service classes (see Fig. 5, which shows a figure relating equivalent bandwidth and number of connections; and see Fig. 2, which shows the comparison between the equivalent bandwidth and maximum allowed bandwidth).

Sabry does not disclose the following features: regarding claim 1, checking, for each of a number of said service classes, whether said traffic mix is contained also within a class-specific delay-limited admissible region approximated as a linear admissible region that contains a set of traffic mixes that fulfill a given class specific delay requirement, where the dimensions of said linear admissible region are the number of connections in the respective service classes; and said new connection for transport over said transport link only if said traffic mix is contained within an intersection of said non-linear overload-limited admissible region and said linear delay-limited admissible region(s); regarding claim 19 and 40, wherein said communication network is a transport network based on the Universal Terrestrial Radio Access Network (UTRAN); regarding claim 22, means for checking, for each of a number of said service classes, whether said traffic mix is contained also within a class-specific delay-limited admissible region approximated as a linear admissible region that contains a set of traffic mixes that fulfill a given class specific delay requirement, where the dimensions of

said linear admissible region are the number of connections in the respective service classes; and means for admitting said new connection for transport over said transport link only if said traffic mix is contained within an intersection of said non-linear overload-limited admissible region and said linear delay-limited admissible region(s);

Andrews discloses a method of admission control for packetized communication networks including the following features.

Regarding claim 1, checking, for each of a number of said service classes, whether said traffic mix is contained also within a class-specific delay-limited admissible region approximated as a linear admissible region (see linear admissible region shown in Fig. 4) that contains a set of traffic mixes that fulfill a given class specific delay requirement (see "The admissible region consists of operating points for which the probability of violating a delay bound for any packet is below a threshold), where the dimensions of said linear admissible region are the number of connections in the respective service classes (see Fig. 4, where the dimension is shown as the number of connections within two separate service classes).

Regarding claim 22, means for checking, for each of a number of said service classes, whether said traffic mix is contained also within a class-specific delay-limited admissible region approximated as a linear admissible region (see linear admissible region shown in Fig. 4) that contains a set of traffic mixes that fulfill a given class specific delay requirement (see "The admissible region consists of operating points for which the probability of violating a delay bound for any packet is below a threshold), where the dimensions of said linear admissible region are the number of connections in

the respective service classes (see Fig. 4, where the dimension is shown as the number of connections within two separate service classes).

Racz discloses a method of facilitating reliable connection admission control for telecommunications system using AAL2 signaling including the following features.

Regarding claim 1, wherein said new connection for transport over said transport link only if said traffic mix is contained within an intersection of said non-linear overload-limited admissible region (discussed above in Sabry, a total bandwidth-based admission limitation) and said linear delay-limited admissible (discussed in above in Andrews, a delay-based admission limitation) region(s) (see "denote the CAC function by $f(C, QoS...)$...C is the capacity of the ATM VCC...QoS is the delay requirement in milliseconds" recited in paragraph [0074], which shows both the capacity limitation and the delay limitation is taken into account in deciding whether to admit the new connection).

Regarding claim 19 and 40, wherein said communication network is a transport network based on the Universal Terrestrial Radio Access Network (UTRAN) (see "UTRAN" recited in paragraph [0009]).

Regarding claim 22, means for admitting said new connection for transport over said transport link only if said traffic mix is contained within an intersection of said non-linear overload-limited admissible region (discussed above in Sabry, a total bandwidth-based admission limitation) and said linear delay-limited admissible (discussed in above in Andrews, a delay-based admission limitation) region(s) (see "denote the CAC function by $f(C, QoS...)$...C is the capacity of the ATM VCC...QoS is the delay

requirement in milliseconds” recited in paragraph [0074], which shows both the capacity limitation and the delay limitation is taken into account in deciding whether to admit the new connection).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Sabry using features, as taught by Andrews and Racz, in order to ensure QoS contract of all connections being transmitted on the link as well as preventing data loss due to link overloading.

6. Claim 3, 10, 24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sabry, Andrews and Racz as applied to claim 1 and 22 above, and further in view of Beshai (US 5,881,049).

Sabry, Andrews and Racz disclose the claimed limitations.

Sabry, Andrews and Racz do not disclose the following features: regarding claim 3 and 24, wherein said overload-limited admissible region contains the set of traffic mixes for which the probability of temporarily overloading a queuing system associated with the transport link is smaller than a given target value; regarding claim 10 and 31, wherein said class-specific packet delay requirement requires that the probability of the class-specific delay being larger than a given class-specific maximum delay is smaller than a given target value.

Beshai discloses an admission control in an ATM switching node including the following features.

Regarding claim 3 and 24, wherein said overload-limited admissible region contains the set of traffic mixes for which the probability of temporarily overloading a queuing system (see “probability of buffer overflow...” recited in column 5, line 57-58) associated with the transport link is smaller than a given target value (see equation 8 in column 7, line 43-49, which shows the probability must be less than the natural logarithm of the QOS).

Regarding claim 10 and 31, wherein said class-specific packet delay requirement requires that the probability of the class-specific delay being larger than a given class-specific maximum delay is smaller than a given target value (see “delay threshold...should not be exceeded by more than a specified probability...” recited in column 8, line 53-62).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Sabry, Andrews and Racz using features, as taught by Beshai, in order to ensure the QoS contract regarding packet loss could be satisfied.

7. Claim 4 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sabry, Andrews and Racz as applied to claim 1 and 22 above, and further in view of Knightly (US 6,801,501).

Sabry, Andrews and Racz disclose the claimed limitations.

Sabry, Andrews and Racz do not disclose the following feature: regarding claim 4 and 35, wherein said step of checking whether said traffic mix is contained within said non-linear overload-limited admissible region is representative of checking whether or

not said traffic mix violates a delay requirement related to packet loss caused by temporary overload of said transport link.

Knighly discloses a method for performing measurement-based admission control using peak rate envelopes including the following features.

Regarding claim 4 and 25, wherein said step of checking whether said traffic mix is contained within said non-linear overload-limited admissible region is representative of checking whether or not said traffic mix violates a delay requirement related to packet loss caused by temporary overload of said transport link (see "take care that the total amount of traffic...does not exceed a certain level which could cause buffer overflow...thereby resulting in either violation of packet loss or delay promises" recited in column 2, lines 8-16).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Sabry, Andrews and Racz using features, as taught by Knighly, in order to ensure the QoS contract regarding packet loss could be satisfied.

Allowable Subject Matter

8. Claim 20-21 and 41-42 are allowed.
9. The following is an examiner's statement of reasons for allowance: claimed formula not found in prior art references.
10. Methods similar to those in the claimed used to determine the admissible regions were found in the background section of the current application and the cited prior arts (such comparing total link capacity to the sum of estimated effective bandwidth of each

connection on the link). However, none of which shows the all of the specific element disclosed in the formula.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

11. Claims 5-9, 11-18, 26-30 and 32-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: claimed formula not found in prior art references.

13. Methods similar to those in the claimed used to determine the admissible regions were found in the background section of the current application and the cited prior arts (such comparing total link capacity to the sum of estimated effective bandwidth of each connection on the link). However, none of which shows the all of the specific element disclosed in the formula.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 2 and 23 are not rejected under prior art rejection because the scope of the claim cannot be determined as the "superposition of periodic on-off connections" is not understood.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Davidson (US 6,665,264) discloses a connection admission control for connection orientated networks.

Elwalid (US 5,978,356) discloses a traffic shaper for network nodes.

Kumaran (US 6,775,233) discloses a rate processor sharing method and apparatus for scheduling data transmission in a CDMA wireless communication system.

Miyamoto (US 2006/0285491) discloses a call admission control system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUTAI KAO whose telephone number is (571)272-9719. The examiner can normally be reached on Monday ~Friday 7:30 AM ~5:00 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571)272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ju-Tai Kao

/Ju-Tai Kao/
Acting Examiner of Art Unit 2616

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